

**DL11
asynchronous
line interface
engineering drawings**

digital equipment corporation • maynard, massachusetts

THIS IS PRINT SET

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SEQUENCE

PRINT SET #3

DRAWING DIRECTORY	B-DD-DL11-Ø
ASYNCHRONOUS LINE INTERFACE	C-UA-DL11-Ø-Ø
ASYNCHRONOUS LINE INTERFACE (PL)	A-PL-DL11-Ø-Ø
ASYNCHRONOUS LINE INTERFACE	E-CS-M78ØØ-Ø-1
CABLE, MODEM BCØ5C	D-UA-BCØ5C-Ø-Ø
CABLE ASSEMBLY (KL81E)	D-IA-7008360-Ø-Ø
MODEM TEST CONN.	D-CS-H315-Ø-1
INSTALLATION PROCEDURE	A-SP-DL11-Ø-2

DRAWING DIRECTORY
ASYNCHRONOUS LINE INTERFACE
ASYNCHRONOUS LINE INTERFACE (PL)
ASYNCHRONOUS LINE INTERFACE
CABLE, MODEM BCØ5C
FILTER NETWORK
MODEM TEST CONN
SOFTWARE LIST
ACCESSORY LIST
INSTALLATION PROCEDURE

B-DD-DL11-Ø
C-UA-DL11-Ø-Ø
A-PL-DL11-Ø-Ø
E-CS-M78ØØ-Ø-1
D-UA-BCØ5C-Ø-Ø
B-CS-G8ØØØ-Ø-1
D-CS-H315-Ø-1
A-SL-DL11-Ø-4
A-AL-DL11-Ø-5
A-SP-DL11-Ø-2

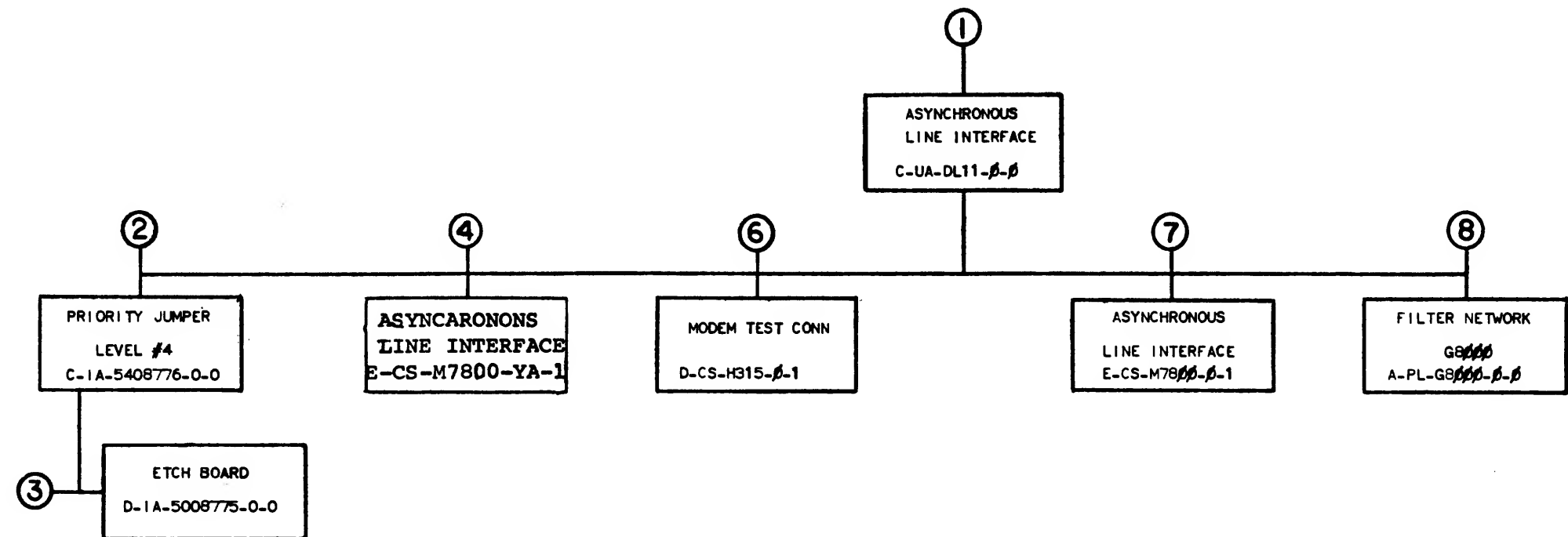
PRINT SET

[illegible]

REVISIONS

DATE	CHG. NO.	REV
2-76	REDRAWN DL11-00009	K
3/78	DL11-10	L

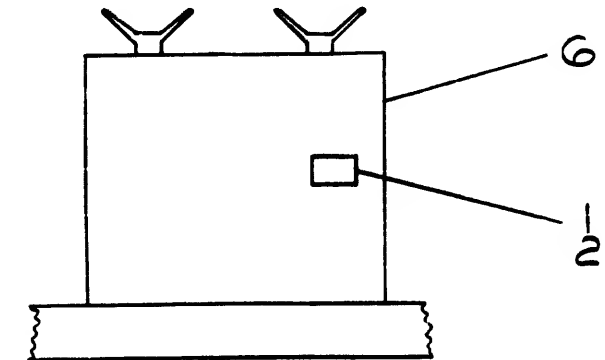
USED ON OPTION/MODEL		DRN.	DATE	TITLE																				
		M. Pierce	4-28-72																					
		CHK'D. R. Cook	DATE 5-9-72																					
		PROJ ENG. P.E. Janson	DATE 5-11-72																					
		PROD. J. McIntyre	DATE 5-15-72	<table> <tr> <th>SIZE</th> <th>CODE</th> <th>NUMBER</th> <th>REV</th> </tr> <tr> <td>B</td> <td>DD</td> <td>DL11-Ø</td> <td>L</td> </tr> </table>	SIZE	CODE	NUMBER	REV	B	DD	DL11-Ø	L												
SIZE	CODE	NUMBER	REV																					
B	DD	DL11-Ø	L																					
		FIELD SERV. R. Evans	DATE 5-15-72	<table> <tr> <th>DIST</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	DIST																			
DIST																								
SHEET	OF 3																							



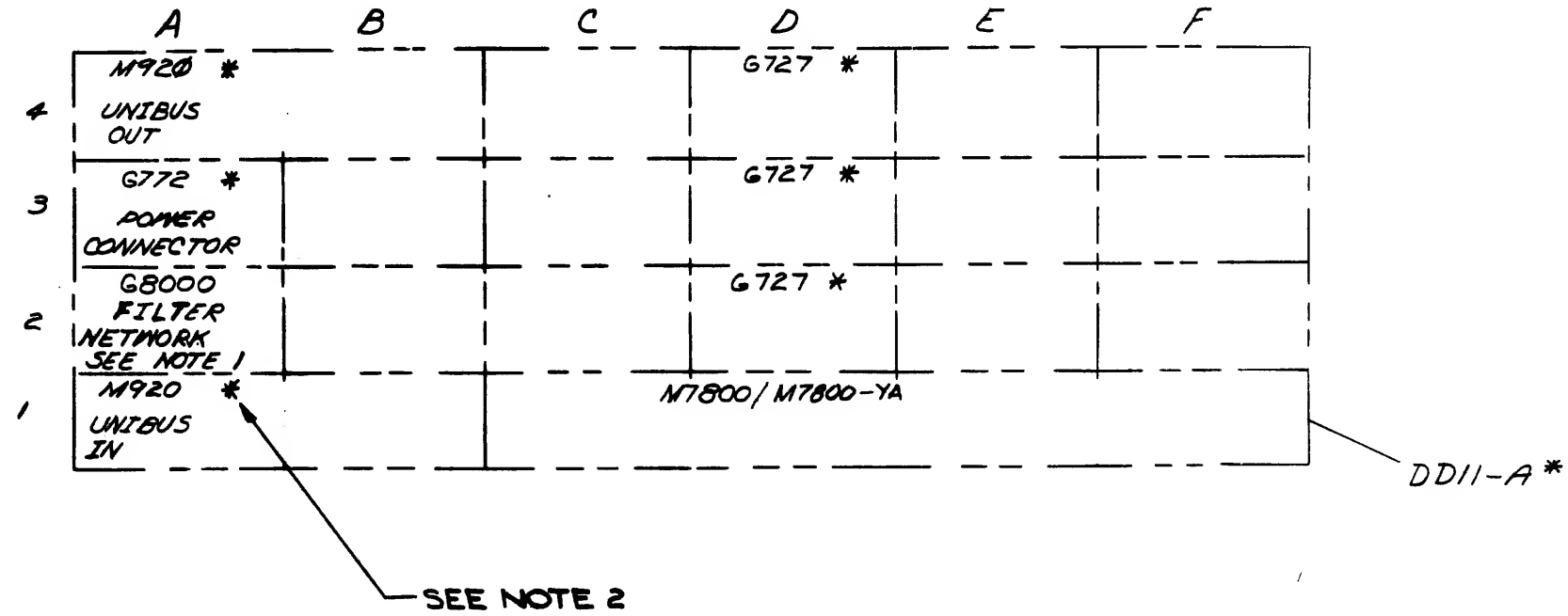
TITLE	SIZE	CODE	NUMBER	REV
ASYNCHRONOUS LINE INTERFACE	B	DD	DL11 - Ø	L

SHEET 2 OF 3

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1972



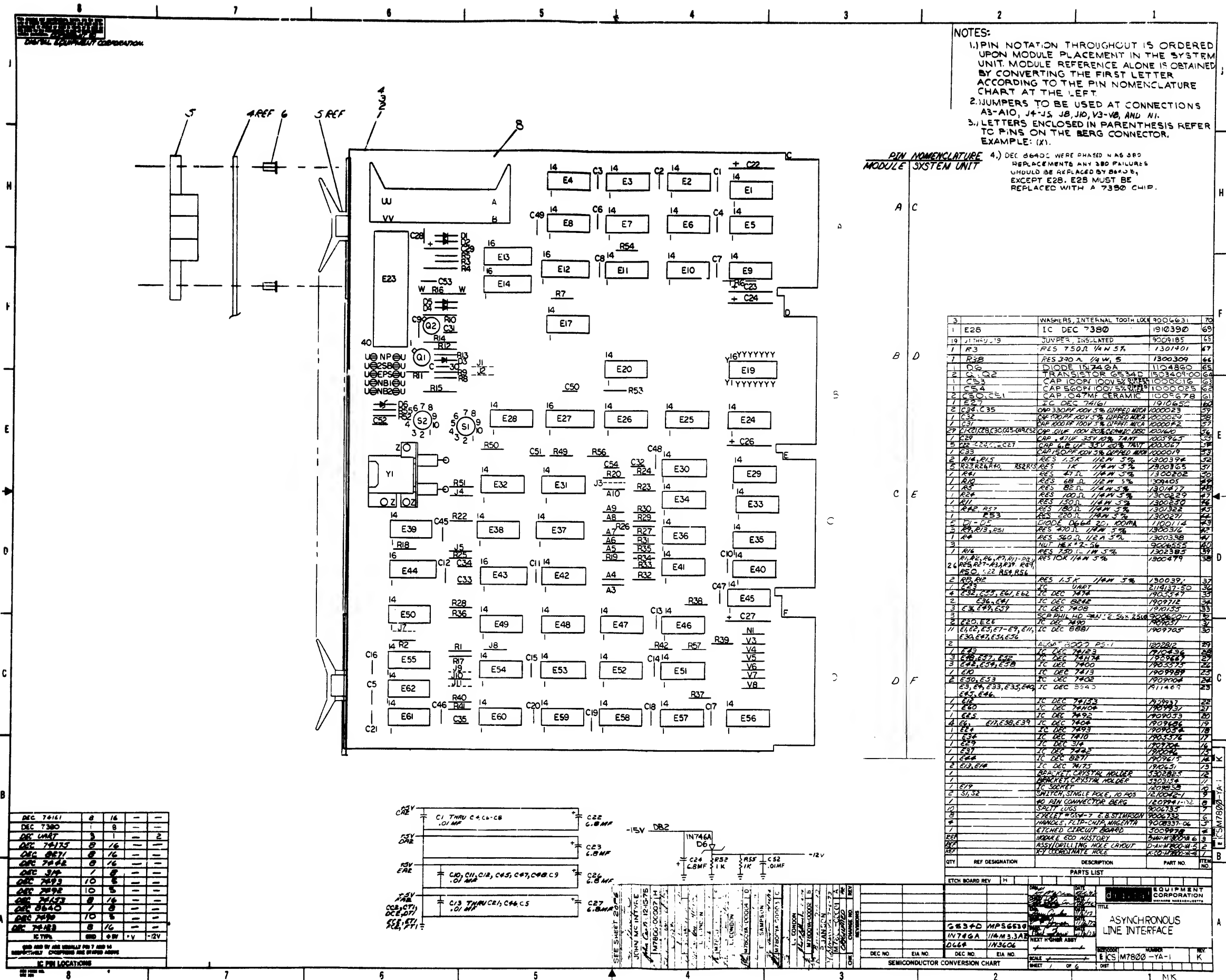
NOTES:
1. G 8000 IS REQUIRED ONLY IN PDP 11 SYSTEMS WHERE +15V IS NOT AVAILABLE. THE INSTALLATION REQUIRES 2 WIRES TO BE ADDED.
A03V2-A02V2
A02NE-CXXUI
WHERE (XX) IS THE SLOT NUMBER CONTAINING THE DLII.
2. ITEMS INDICATED WITH ASTERISK (*) ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS UNIT.



REV.	CHANGE NO.	DATE	BY	CHK'D.
A	DLII-00001	2-18-72	R. JANSON	
B	DLII-00002	2-19-72	R. JANSON	
C	DLII-00003	2-21-72	R. JANSON	
D	DLII-00004	2-21-72	R. JANSON	
E	DLII-00005	2-21-72	R. JANSON	
F	DLII-00006	2-21-72	R. JANSON	
G	DLII-00007	2-21-72	R. JANSON	
H	DLII-00008	2-21-72	R. JANSON	
I	DLII-00009	2-21-72	R. JANSON	
J	DLII-00010	2-21-72	R. JANSON	
K	DLII-00011	2-21-72	R. JANSON	
L	DLII-00012	2-21-72	R. JANSON	
M	DLII-00013	2-21-72	R. JANSON	
N	DLII-00014	2-21-72	R. JANSON	
O	DLII-00015	2-21-72	R. JANSON	
P	DLII-00016	2-21-72	R. JANSON	
Q	DLII-00017	2-21-72	R. JANSON	
R	DLII-00018	2-21-72	R. JANSON	
S	DLII-00019	2-21-72	R. JANSON	
T	DLII-00020	2-21-72	R. JANSON	

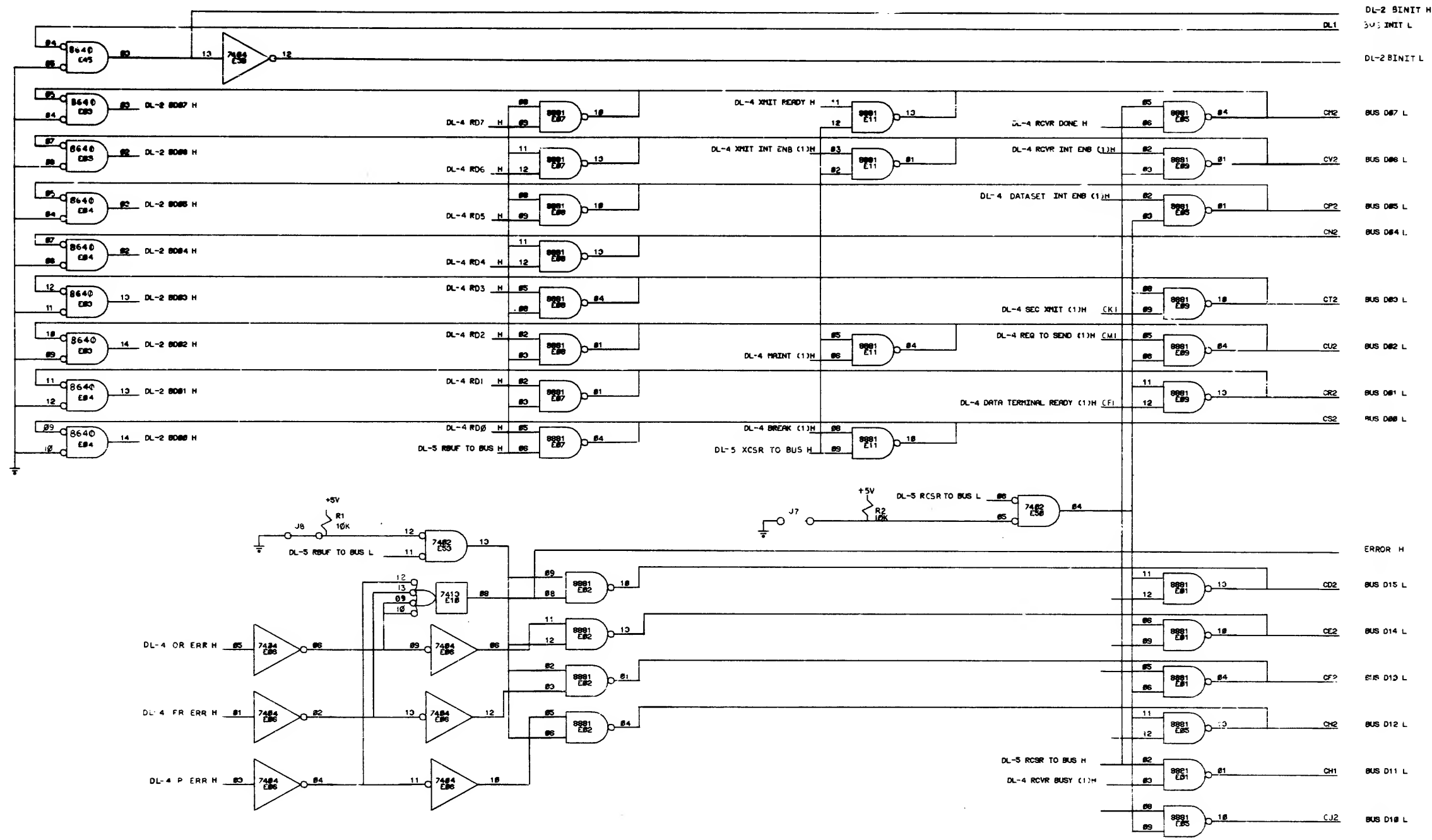
FIRST USED ON OPTION/MODEL PDP-11	QTY.	DESCRIPTION	PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES	PARTS LIST			
DECIMALS .XXX = .005 .XX = .02 .X = .1	ANGLES ±0° 30'	DRN. <i>M. Rivera</i> DATE 2/18/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	MATERIAL + + +	CHK'D. <i>J. F. Janzen</i> DATE 4-24-72	TITLE ASYNCHRONOUS LINE INTERFACE	
FINISH + + +	SCALE NONE	ENG. <i>R. E. Janzen</i> DATE 5-11-72	SIZE CODE C UA	
		PROD. <i>J. M. Dwyer</i> DATE 5-15-72	NUMBER DLII-0-0	
		NEXT HIGHER ASSY. B-00-DLII-0	REV. H	
		SHEET 1 OF 1	DIST. G	

[illegible]



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DIGITAL EQUIPMENT CORPORATION



REV.	DATE	BY
1	11/17/76	S. MASANO
2	11/17/76	S. MASANO
3	11/17/76	S. MASANO
4	11/17/76	S. MASANO
5	11/17/76	S. MASANO
6	11/17/76	S. MASANO
7	11/17/76	S. MASANO
8	11/17/76	S. MASANO
9	11/17/76	S. MASANO
10	11/17/76	S. MASANO
11	11/17/76	S. MASANO
12	11/17/76	S. MASANO
13	11/17/76	S. MASANO
14	11/17/76	S. MASANO
15	11/17/76	S. MASANO
16	11/17/76	S. MASANO
17	11/17/76	S. MASANO
18	11/17/76	S. MASANO
19	11/17/76	S. MASANO
20	11/17/76	S. MASANO

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
DLII				
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES				
DECIMALS		ANGLES		
.XXX - .000		± 0° 30'		
.XX - .02				
.X - .1				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL		NEXT HIGHER ASSY.		
FINISH		SCALE		
		SHEET 2 OF 6		

EQUIPMENT CORPORATION	
TITLE ASYNCHRONOUS LINE INTERFACE (BUS RECEIVERS & DRIVERS) DL-2	
NUMBER	REV.
D CS M7800-YA-1	K
SHEET 2 OF 6	DIST.

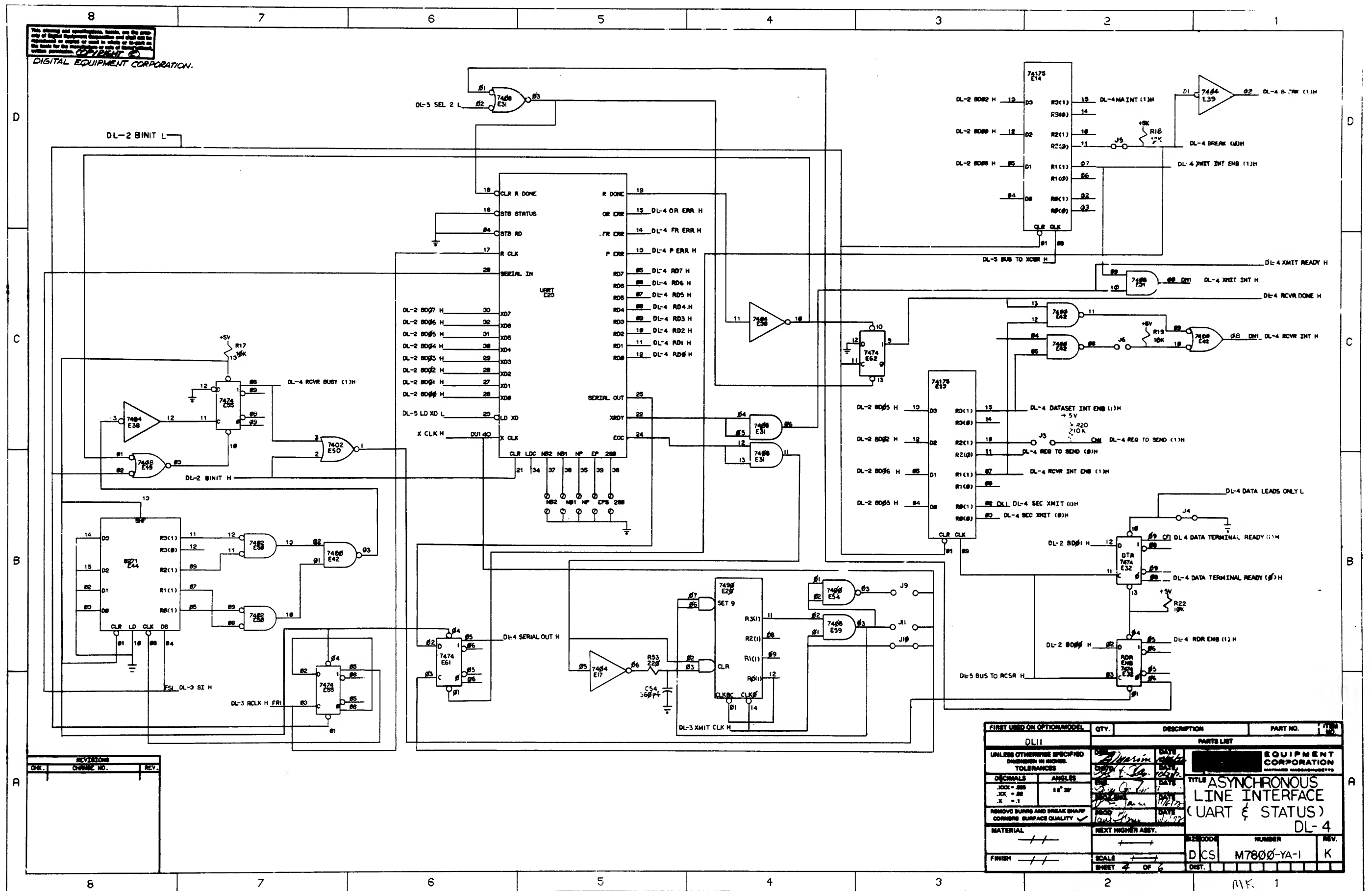
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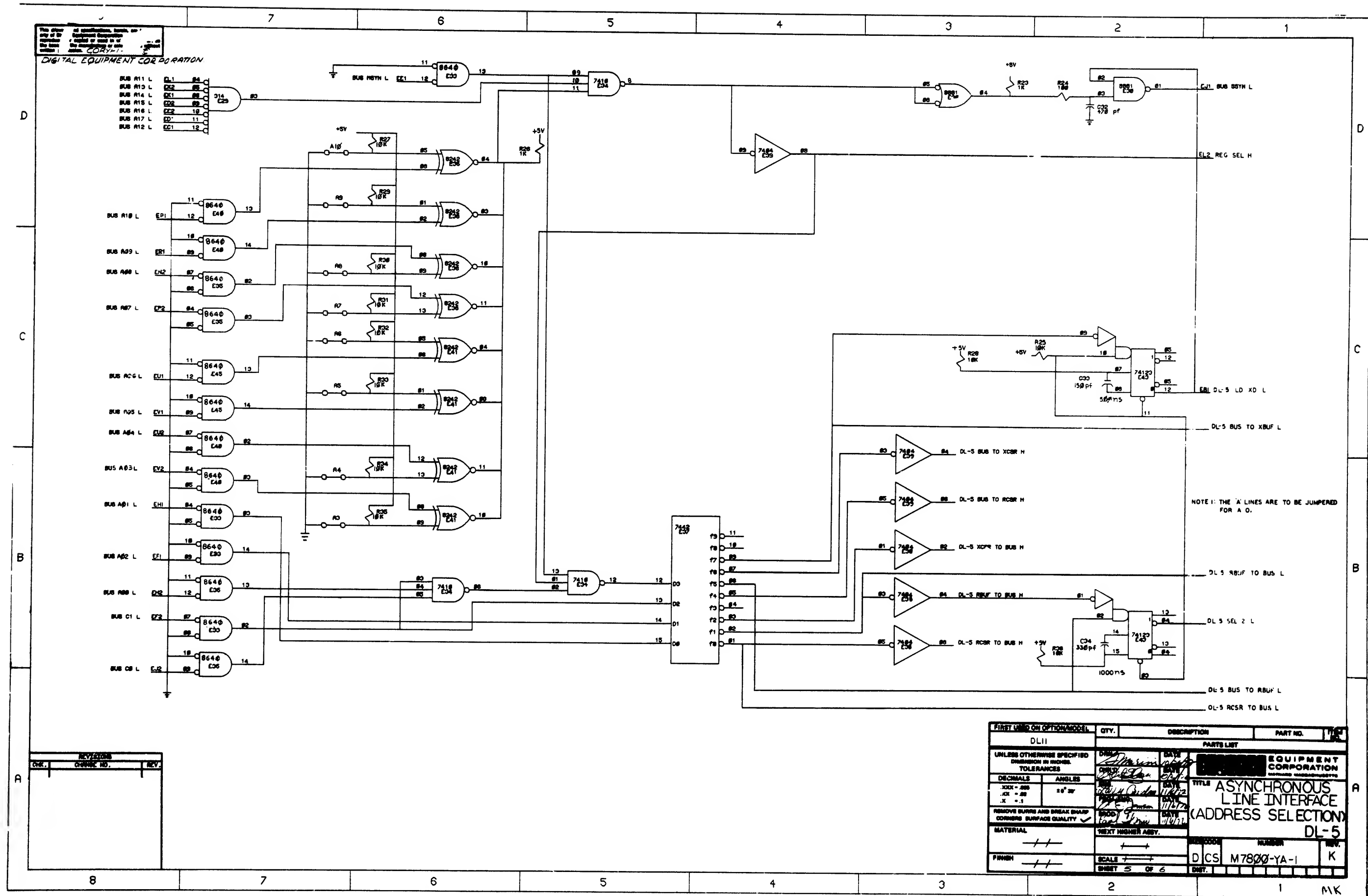
DIGITAL EQUIPMENT CORPORATION.

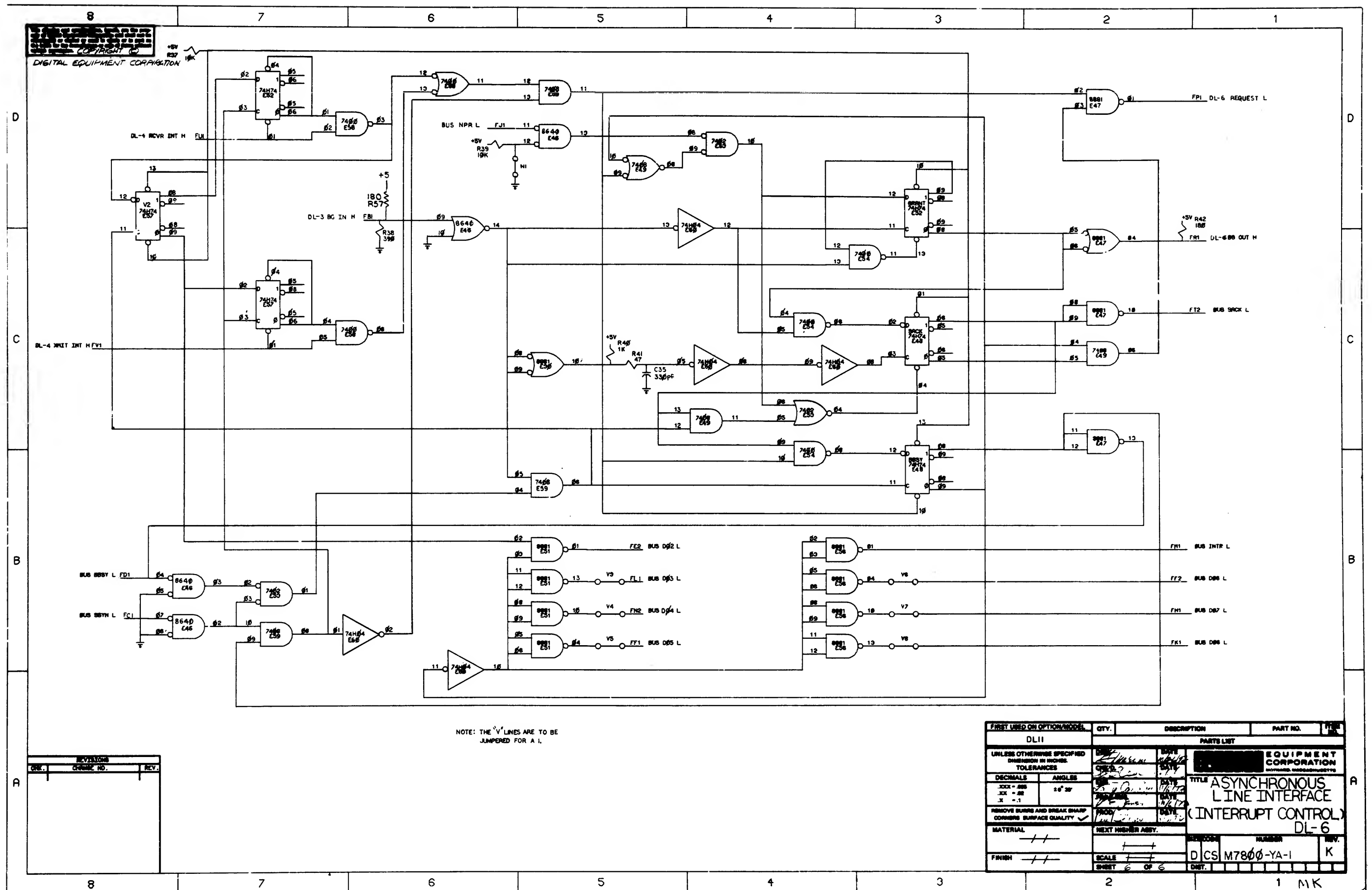
SEE NOTE 3

Y1	844.8 KHZ	103296 MHZ	1152 MHZ	4608MHZ
	BAUD	USEC	BAUD	USEC
1	36.7	1700	44.8	1342
2	55	1135	67.3	928
3	110	567	134.5	464
4	220	284	269	232
5	440	142	538	116
6	880	71	1076	58
7	1320	47.4	1614	38.7
8	1760	35.5	2152	29
9	BERG CLOCK INPUT - COMMON TO RCVR AND XMIT			
10	EXTERNAL CLOCK INPUT - RCVR; DSI XMIT; DRI			

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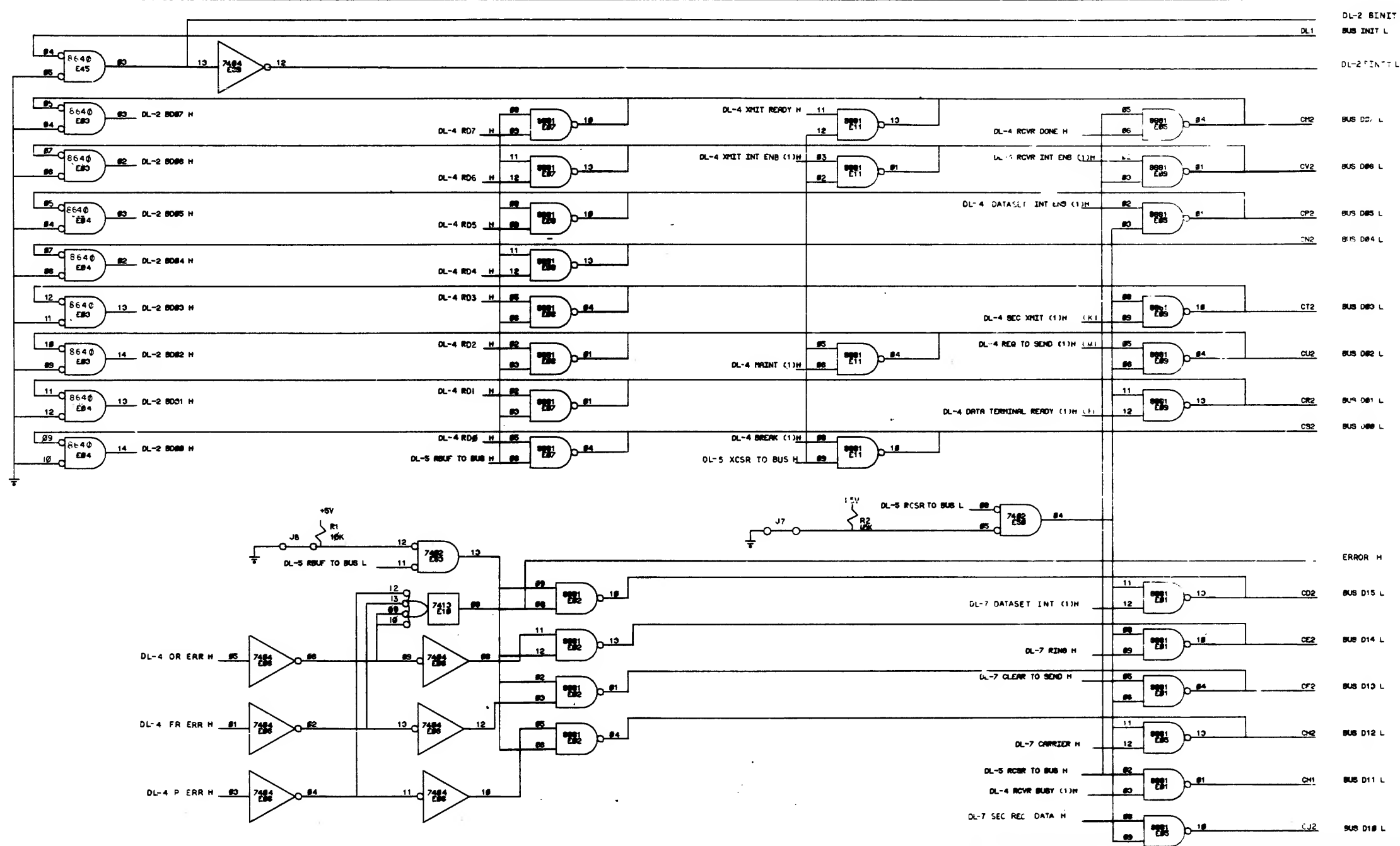
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D

C

B

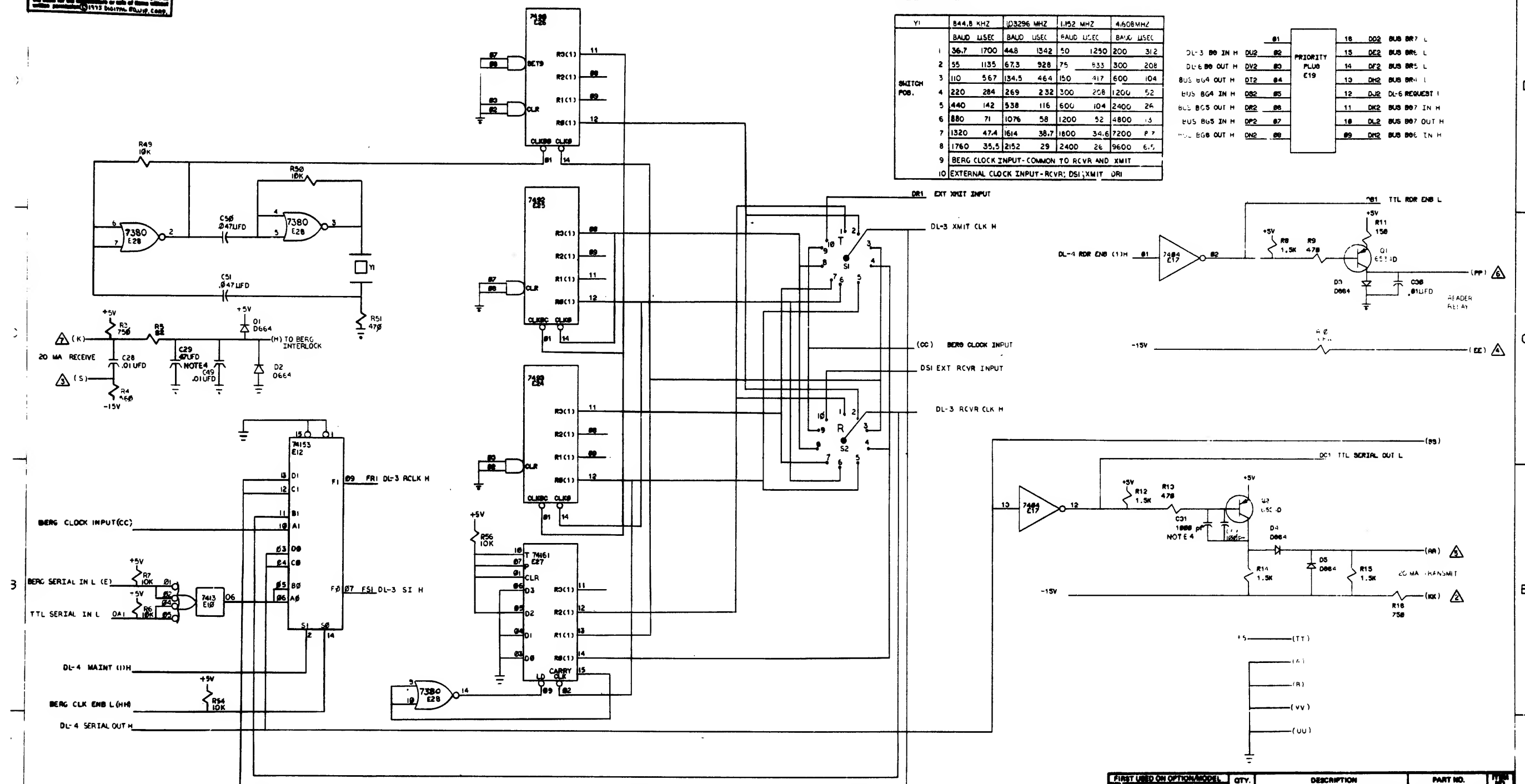
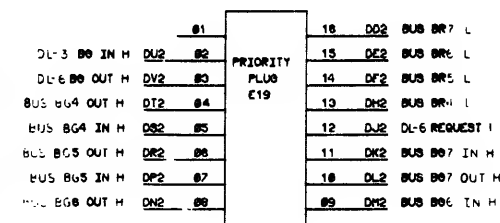
A



FIRST USED ON OPTION NO.		QTY.	DESCRIPTION	PART NO.
DL11				
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES TOLERANCES				
DECIMALS	ANGLES			
.XXX - .000	± 0° 30'			
.XX - .00				
.X - .0				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL				
FINISH				
EQUIPMENT CORPORATION				
TITLE ASYNCHRONOUS LINE INTERFACE (BUS RECEIVERS & DRIVERS)				
D CS M7800-0-1				

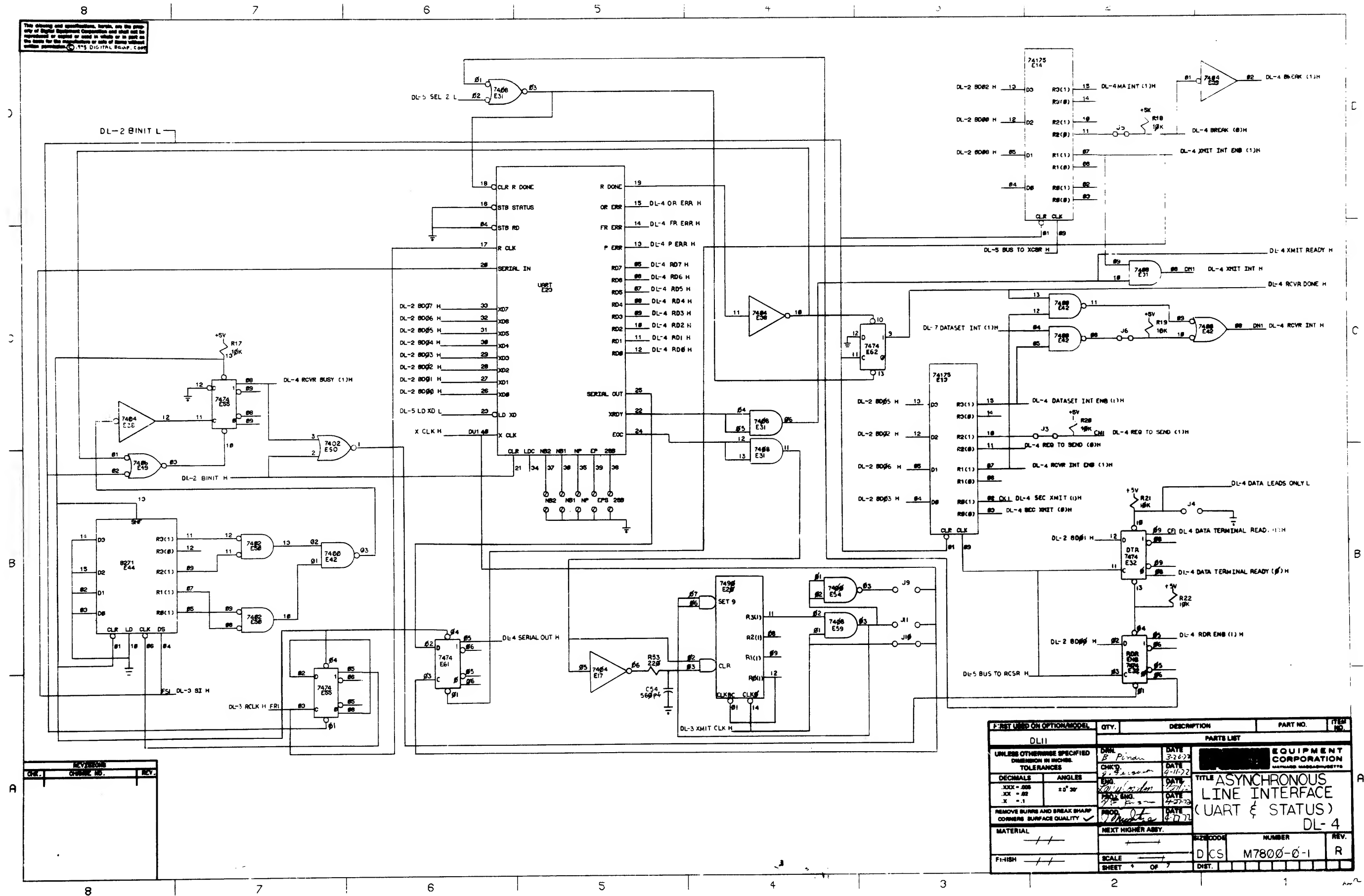
SEE NOTE 3

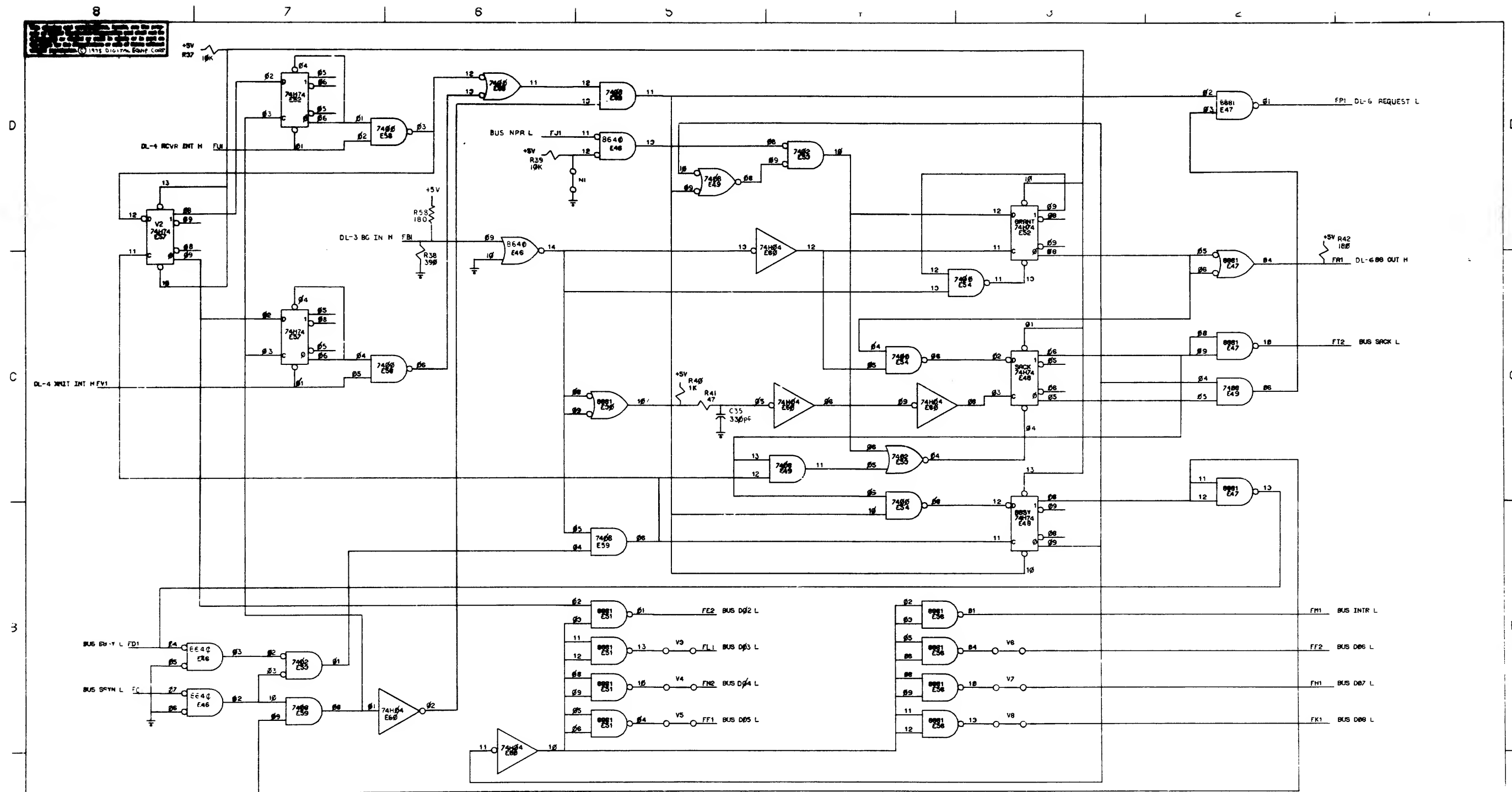
Y1	844.8 KHZ	103296 MHZ	1152 MHZ	41608MHZ
	BAUD 1152C	BAUD 1152C	FAUD 1152C	BAUD 1152C
1	36.7 1700	44.8 1342	50 1250	200 31
2	55 1135	67.3 928	75 833	300 20
3	110 567	134.5 464	150 417	600 10
4	220 284	269 232	300 208	1200 52
5	440 142	538 116	600 104	2400 24
6	880 71	1076 58	1200 52	4800 15
7	1320 47.4	1614 38.7	1800 34.6	7200 11
8	1760 35.5	2152 29	2400 26	9600 6.7
9	BERG CLOCK INPUT - COMMON TO RCVR AND XMIT			
10	EXTERNAL CLOCK INPUT - RCVR: DSI XMIT: DRI			



- NOTES:
1. LETTERS ENCLOSED IN PARENTHESIS REFER TO PINS ON THE BERG CONNECTOR. EXAMPLE: (X)
 2. NUMBERS WITHIN TRIANGLES REFER TO PINS ON THE FEMALE TAAPE-M-LOCK CONNECTOR WHEN USING THE 700360 CABLE, THIS CABLE ALSO CONNECTS BERG PINS H TO E.
 3. ALTHOUGH THE ABOVE TABLE INCLUDES ONLY THE STANDARD DLII CRYSTAL, OTHER VALUES MAY BE SPECIFIED BY THE CUSTOMER OR BY OTHER DOCUMENTATION OF AN OPTION WHICH USES THE DLII.
 4. CRYSTAL FREQUENCY IS 10.738 MHZ. FOR NORMAL OPERATION AT 1500 MHZ OR LESS, DLII-AOR-C.

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.
DLII		PARTS LIST	
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES. TOLERANCES	DRAWN <i>B. J.</i>	DATE <i>5-20-72</i>	EQUIPMENT CORPORATION MONTROSE, ILLINOIS 61850
DECIMALS ANGLES	CHK'D <i>J. L.</i>	DATE <i>5-25-72</i>	
.XXX - .999 ± 0° 30'	ENG. <i>G. J.</i>	DATE <i>5-27-72</i>	TITLE ASYNCHRONOUS LINE INTERFACE
.XX - .99 " "	PROD. ENG. <i>H. J.</i>	DATE <i>5-27-72</i>	(CLOCK & CURRENT LOOPS) DL-3
.X - .9 " "	PROD. MGR. <i>A. J.</i>	DATE <i>5-27-72</i>	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	NEXT HIGHER ASSY.	SIZING CODE	NUMBER
MATERIAL <i>// //</i>	<i>// //</i>	D CS	M78ØØ-Ø-I
FINISH <i>// //</i>	SCALE SHEET 3 OF 3	DIST.	R





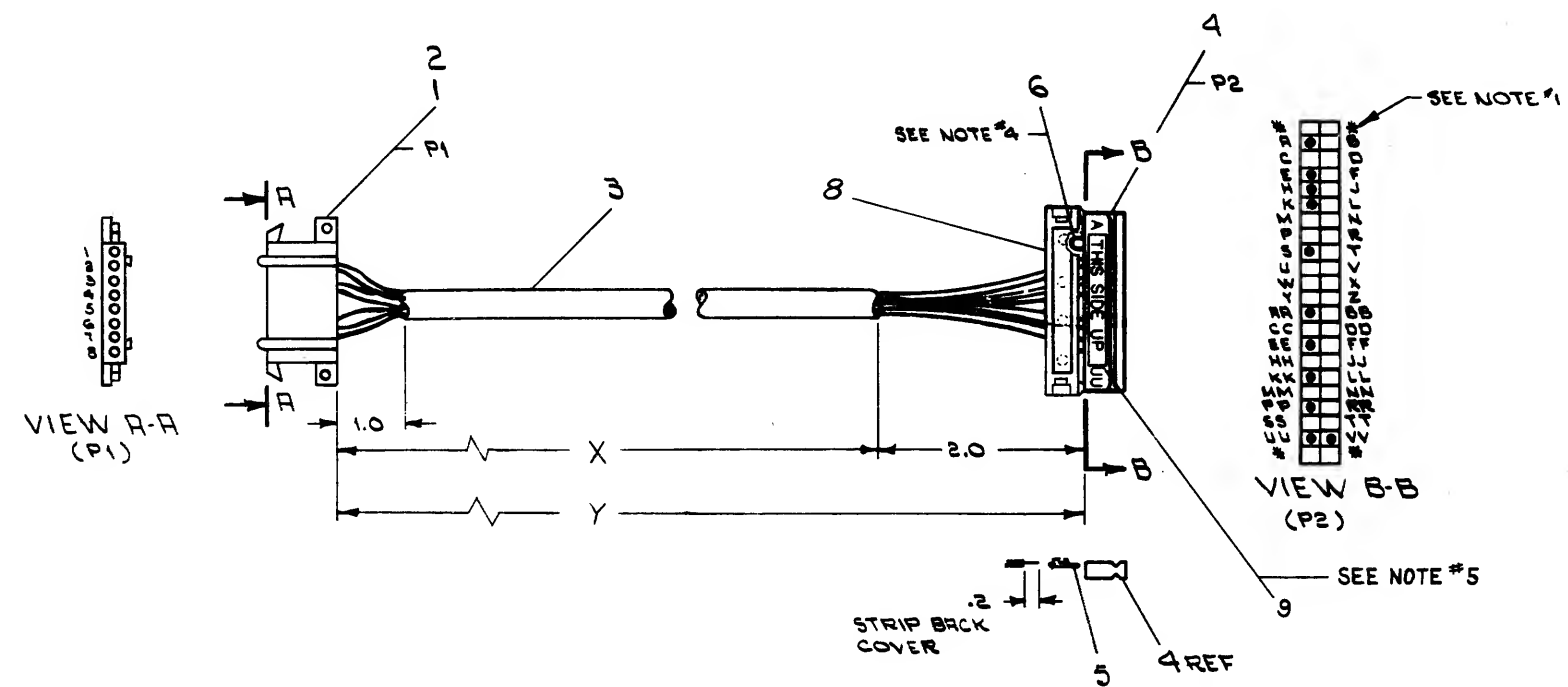
NOTE: THE 'V' LINES ARE TO BE JUMPED FOR A L.

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	REV.
DL11					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES		DATE 8-20-72	EQUIPMENT CORPORATION MILWAUKEE, WISCONSIN 53211		
DECIMALS .XXX = .005 .XX = .02 .X = .1		CHKD. J. M. G. / 8-20-72	TITLE ASYNCHRONOUS LINE INTERFACE (INTERRUPT CONTROL) DL-6		
ANGLES ±0° 30'		DATE 8-20-72	REV. R		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE 8-20-72	DIST.		
MATERIAL ++		DATE 8-20-72	SHEET OF		
FINISH ++		DATE 8-20-72	SCALE OF		
		DATE 8-20-72	SHEET OF		

WIRE TABLE						
ITEM NO.	DESCRIPTION		PAIR NO.	FROM		TO
	AWG	COLOR		CONNECTION	WITH	CONNECTION WITH
3	22	BLK	1	P1-2	2	P2-KK
3	1	RED		P1-3	2	P2-S
3,7		SHIELD		SEE NOTE #2	-	P2-R(NOTE #3)
3		BLK	2	P1-4	2	P2-EE
3		WHT		P1-5	2	P2-RR
3,7		SHIELD		SEE NOTE #2	-	P2-UU(NOTE #3)
3		BLK	3	P1-6	2	P2-PP
3		GRN		P1-7	2	P2-K
3,7		SHIELD		SEE NOTE #2	-	P2-VV(NOTE #3)
6	22	BLK	-	P2-E	3	P2-H

LEGEND		
VARIATION	LENGTH	
	X	Y
7008360-0	25 IN ± 1.0	27 IN ± 1.0
7008360-1	46 IN ± 1.0	48 IN ± 1.0
7008360-9	9 FT ± 2 IN	9 FT 2 IN ± 2 IN

- NOTES:
- * ASTERISKS INDICATE CAVITIES NOT USED OR DESIGNATED BY LETTERS.
 - DRAIN WIRES TO BE CUT BACK TO OUTER INSULATION ON P1 END OF CABLE ONLY. SHIELDS TO BE CUT BACK TO OUTER INSULATION ON BOTH ENDS OF CABLES.
 - DRAIN WIRES ON P2 END OF CABLE TO BE EACH ENCLOSED WITH ITEM #7 (TUBING) FROM END OF CABLE JACKET TO POINT WHERE THEY ENTER P2 CONNECTOR.
 - ITEM #6 (WIRE) TO BE APPROXIMATELY ONE (1) INCH LONG.
 - PLACE ITEM #9 ("THIS SIDE UP" STICKER) ON LETTERED SIDE OF ITEM #4 (BERG HOUSING) AS SHOWN.



QTY.	DESCRIPTION	PART NO.	ITEM NO.
1	LABEL, THIS SIDE UP	3611567	9
1	STRAIN RELIEF	1211166	8
1	R/R TUB. #8 TEF. THAWALL WRT	310728-11	7
1	R/R WIRE #22 AWG STRD TEF BLK	3107350-00	6
11	SOCKET, CRIMP #47216	1210089-07	5
1	HOUSING, BERG #65043-D15	1210918-15	4
1	R/R CABLE, BELDEN #107T-3PR SHLD	310728-0	3
6	CONTACT WRT-MLOCK (FEMALE)	1208379-03	2
1	CONN. WRT-MLOCK (FEMALE)	1208340-00	1

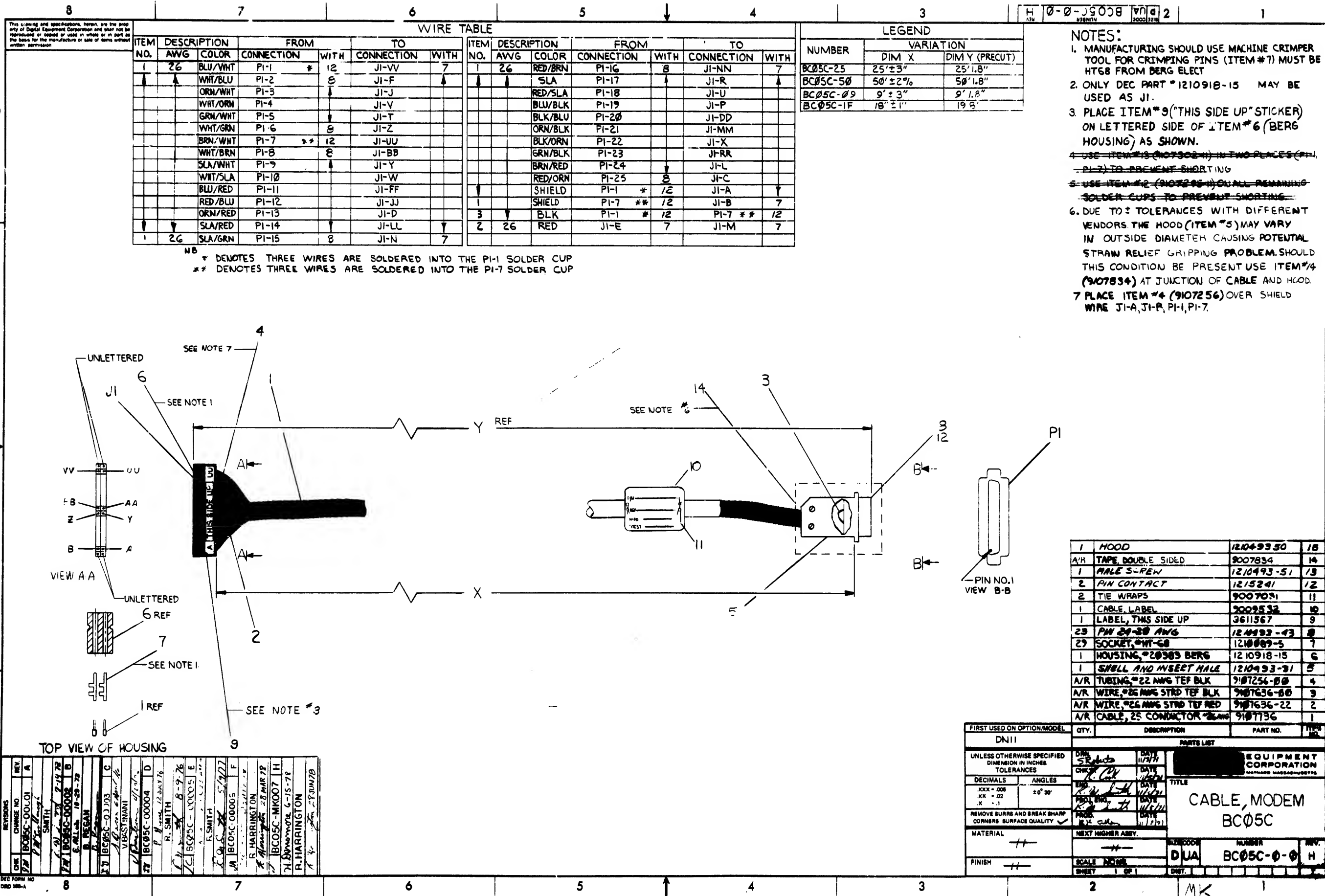
REV.	CHANGE NO.	DATE	BY	CHKD.
1	KL8E-00000	12/1/71	A	
2	KL8E-00006	12/1/71	B	
3	KL8E-00007	12/1/71	C	
4	KL8E-00008	12/1/71	D	
5	KL8E-00009	12/1/71	E	
6	KL8E-00010	12/1/71	F	
7	KL8E-00011	12/1/71	G	
8	KL8E-00012	12/1/71	H	
9	KL8E-00013	12/1/71	I	
10	KL8E-00014	12/1/71	J	

FIRST USED ON OPTION/MODEL
PDP-8E

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
ANGLES
FINISH
MATERIAL
SEE PARTS LIST

DATE
12/1/71
DATE
12/1/71
DATE
12/1/71
DATE
12/1/71
DATE
12/1/71

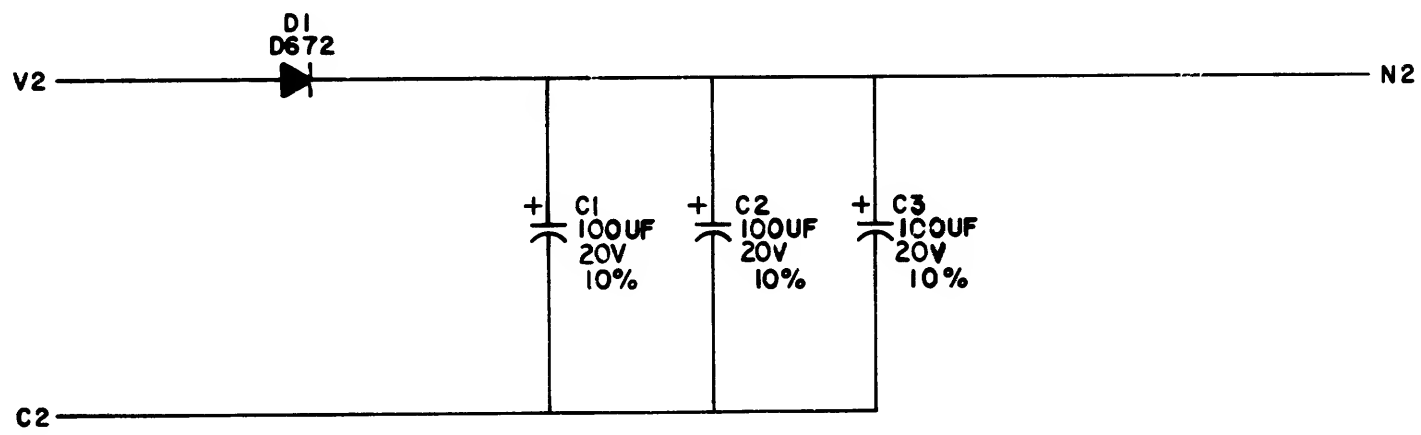
EQUIPMENT CORPORATION
MILFORD, MASSACHUSETTS
TITLE
CABLE ASSEMBLY (KL8E)
SCALE NONE
SHEET 1 OF 1





REV. A	NUMBER 1-0-00089	CODE CS	SIZE B
--------	------------------	---------	--------

THIS SCHEMATIC IS FURNISHED ONLY FOR TEST AND MAINTENANCE PURPOSES. THE CIRCUITS ARE PROPRIETARY IN NATURE AND SHOULD BE TREATED ACCORDINGLY. COPYRIGHT 1971 BY DIGITAL EQUIPMENT CORPORATION



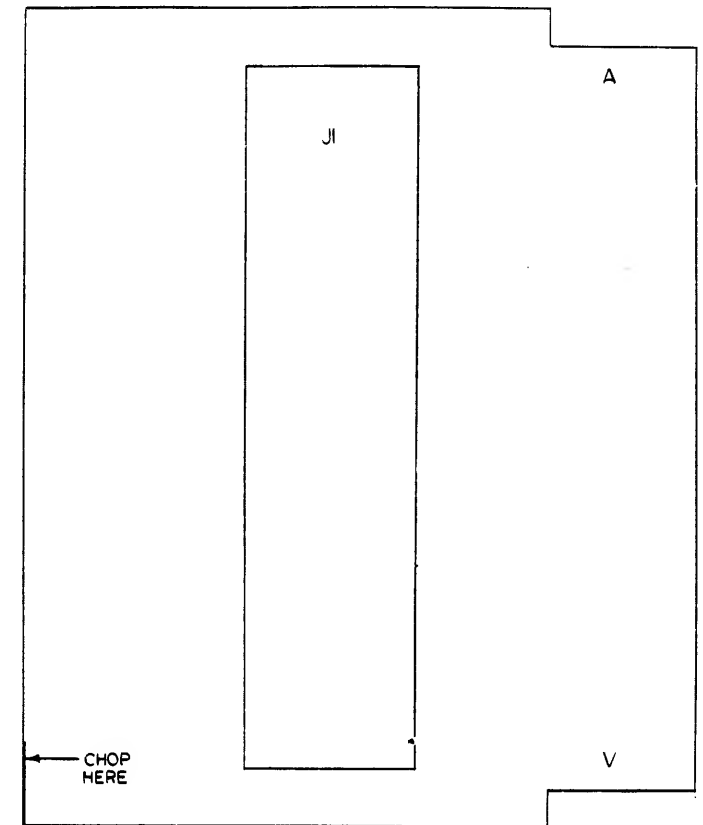
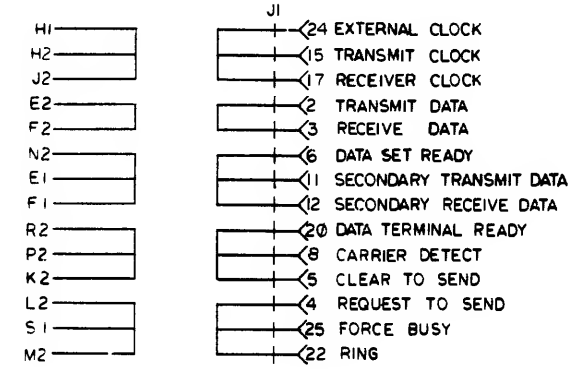
REVISIONS	CHK	CHG NO.	REV	DRN. S. COOPER CHK'D. R. LEE ENG. R. LEE PROD.	DATE 1/19/71 2/13/71 3/11/71 DATE	TRANSISTOR & DIODE CONVERSION CHART				digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE FILTER NETWORK G8000			
						DEC	EIA	DEC	EIA		SIZE B	CODE CS	NUMBER G8000-0-1	REV. A
						D672	IN3653							
						PRINTED CIRCUIT REV. A								



DIST. 324, 434, 435 2

4 PINK

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7		CYELET FEED THRU	5006731	6
1	J1	CONN CINCH DB 255 3	1210247	5
1		ETCHED CIRCUIT BOARD	5010020	4
		MODULE ECO HISTORY	B-MH-H315-0-6	3
		ASSY/DRILLING HOLE LAYOUT	C-AH-H315-0-5	2
		X-Y COORDINATE HOLE LOCATION	K-CO-H315-0-4	1
QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO

ETCH BOARD REV		A		B	
DRN.	3-9-72	FIRST USED ON		40-00000	
CHK'D	3-10-72	TITLE		MODEM TEST CONNECTOR	
ENG	3-13-72	SIZE		CODE	NUMBER
PROD	3-23-72	D		CS	H315-0-1
NEXT HIGHER ASSY.		REV.		A	
SCALE		SHEET		1 OF 1	
DIST.		REV.		A	

DESIGNED BY	CHK	DATE
CHAS. W. O'NEILL	A	3-9-72
DRN.		
R. HARRINGTON		
APP.		

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			LEGEND		QUANTITY / VARIATION												
ACCESSORY LIST			D DOCUMENT DN DOCUMENT CHANGE NOTICE PA PAPER TAPE ASCII PB PAPER TAPE BINARY PM PAPER TAPE READ-IN-MODE														
MADE BY E.PELLEGRINI DATE JUNE 26, 1972		CHECKED P.JANSON DATE 8-8-72		SECTION													
ENG PAUL JANSON DATE JUNE 26, 1972		PROD DATE 8-8-72		ISSUED SECT.													
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION				DL11-A	DL11-B	DL11-C	DL11-D	DL11-E		KIT CHECK	BY	DATE	INSTALLATION CHECK	BY	DATE
1	M78000	ASYNCHRONOUS LINE INTERFACE (EIA)				-	1	-	1	1							
2	G80000	FILTER NETWORK				0	A/R	0	A/R	A/R							
3	M78000-YA	ASYNCHRONOUS LINE INTERFACE (CURRENT LOOP)				1	0	1	0	0							
4	5408776	PRIORITY JUMPER LEVEL #4				1	1	1	1	1							
5	BC05-C-25	MODEM CABLE				0	1	0	1	1							
6	7008360	TTY CABLE				1	0	1	0	0							
7		CRYSTAL				1	1	1	1	1							
8		DL11 ENGINEERING DRAWINGS				1	1	1	1	1							
9	DEC-11-HDLAA-A-D	DL11 ASYNCHRONOUS LINE INTERFACE MANUAL				1	1	1	1	1							
10	LIBKIT-11-KL11-04	KL11 MAINDEC				1	1	0	0	0							
11	LIBKIT-11-DL11C-A-K	DL11 MAINDEC				0	0	1	1	0							
12	LIBKIT-11-DL11E-A-K	DL11 MAINDEC				0	0	0	0	1							
13	H315	MODEM TEST CONNECTOR				0	A/R	0	A/R	A/R	SEE	NOTE # 3					
	NOTES: 1. G80000 IS	REQUIRED ONLY IN PDP-11 SYSTEMS															
	WHERE +15V IS NOT AVAILABLE.	ONE PER DD11-A.															
	2. CRYSTAL	FREQUENCY DEFINED BY CUSTOMER SPECIFIED BAUD RATE.															
	3. ONE H315	PER PDP11 SYS. OR ONE PER DL11 B D OR E LOOSE PIECE/ADD ON.															
	4. INSURE THAT	TRANSPARENT VINYL TAPE HAS BEEN APPLIED TO THE															
	TOP SURFACE OF THE	CRYSTAL AND MOUNTING BRACKET.															
TITLE		DL11 CHECK LIST		ASSY. NO.		SIZE CODE		NUMBER		REV.		ECO NO					
						A AL		DL11-0-5		D		DL11-00010					
				SHEET 1 OF 1		DIST.											

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DATE 6-21-72

DL11 INSTALLATION PROCEDURE

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
C	CHANGE PER ECO	DL11-4	JANSON	3/73	P. Janson	4-6-73
D	CHANGE PER ECO	DL11-5	CONDON	7/73	P. Condon	8-6-73
E	CHANGE PER ECO	DL11-7	CONDON	8/74	P. Condon	8-11-74
F	CHANGE PER ECO	DL11-8	CONDON	4-75	P. Condon	4-18-75
H	CHANGE PER ECO	DL11-10	HARRINGTON	3-78	P. Harrington	12-28-78

ENG Paul E. Janson
DEC FORM NO. DRA 107A
REV H

SIZE CODE A SP
NUMBER DL11-0-2
SHEET 1 OF 11

ENGINEERING SPECIFICATION

CONTINUATION SHEET

DL11 INSTALLATION PROCEDURE

DL11 INSTALLATION PROCEDURE:
Installation of the M7800 module or its variation as a DL11-A through DL11-E option consists of the following preparations:
1. Jumper insertion/deletion for selection of operation mode (A, B, C, D, or E TO MEET CUSTOMER'S REQUIREMENTS).
2. Register address assignment.
3. Vector address assignment.
4. Priority assignment.
5. Special NPR jumper insertion/deletion.
6. Selection of data format (data bits, stop bits, parity).
7. Selection of crystal for baud rate.
8. Installation of G8000 in systems where +15v is not available.
9. Filter capacitor selection for high baud rate current-loop.
A. OPERATION MODE:
The following describes the jumpers associated with controlling the mode of operation (A,B,C,D, or E):
J1. Ties EIA driver to REQUEST-TO-SEND lead (pin 4) of dataset cable. IN for DL11-B,D, and E; does not affect DL11-A and C. Drawing DL-7.
J2. Ties EIA driver, normally used for the REQUEST-TO-SEND lead, to FORCE BUSY lead (pin 25) for use with Bell 103E. This is a customer option. If not specified, jumper is OUT for all DL11's. Drawing DL-7..
J3. When inserted, allows REQUEST-TO-SEND lead (pin 4) to be controlled by bit 2 of the receiver status register. OUT for DL11-B and D; IN for DL11-E; does not affect DL11-A and C. Drawing DL-4.
J4. When inserted, forces "DATA LEADS ONLY" mode of EIA operation. Turns DATA TERMINAL READY (pin 20) and REQUEST-TO-SEND (pin 4) on. IN for DL11-B and D; OUT for DL11-E; does not affect DL11-A and C. Drawing DL-4.
J5. When inserted, allows the BREAK bit to function. OUT for DL11-A and B; IN for DL11-C,D, and E. Drawing DL-4.
J6. When inserted, allows DSET INT to cause interrupts. OUT for DL11-A,B,C and D; IN for DL11-E. Drawing DL-4.
J7. When inserted, allows dataset control bits to be read as part of the receiver status register.

DEC FORM NO. DEC 16-13811-1022-N370
DRA 106
REV H

SIZE CODE A SP
NUMBER DL11-0-2
SHEET 2 OF 11

ENGINEERING SPECIFICATION

CONTINUATION SHEET

DL11 INSTALLATION PROCEDURE

B. REGISTER ADDRESS ASSIGNMENTS:
The DL11 can respond to addresses with the following format:
17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
JUMPERS
Selects 1 of 4 Registers
Byte Control
Bits 10 through 3 are controlled by jumpers A10 to A3. A jumper inserted indicates a zero.
For the DL11-A and B used as the console device, address 777560 is assigned. For additional units, assign 776XX0, where XX=50 for the first additional unit and XX=67 for the 16th unit.
For the DL11-C,D and E assign address 77XXX0, where XX=561 for the first line, and XX=617 for the 31st line. Assign all C's first, then D's, and then E's.

DEC FORM NO. DEC 16-13811-1022-N370
DRA 106
REV H

SIZE CODE A SP
NUMBER DL11-0-2
SHEET 3 OF 11

ENGINEERING SPECIFICATION

CONTINUATION SHEET

DL11 INSTALLATION PROCEDURE

C. VECTOR ADDRESS ASSIGNMENT:
Jumpers V8 through V3 control the interrupt vector. A jumper inserted provides a vector bit of one. Vectors can be produced in the form XX# and XX4 where XX ranges from #0 to 77.
For the DL11-A and B used as a console device the vector address is 060/064. For additional units vectors are floating.
For the DL11-C,D, and E vector addresses are floating. Assign all C's first, then D's, then E's.
D. PRIORITY ASSIGNMENT:
Interrupt priority is established by inserting a "priority plug" in the socket at IC location E19. For DL11-A,B,C,D and E use level 4, for the standard assignment or level 5-7 as specified by the customer or the documentation of an option which uses the DL11.
SUMMARY OF REGISTER, VECTOR AND PRIORITY ASSIGNMENTS:

	ADDRESS	VECTOR	PRIORITY
DL11-A,B CONSOLE	777560 777562 777564 777566	60/64	BR4
DL11-A,B ADDITIONAL UNITS	776XX# 776XX2 776XX4 776XX6	FLOATING	BR4
Where XX= 50 for line #1 and XX= 67 for line #16			
DL11-C,D,E	77XXX# 77XXX2 77XXX4 77XXX6	Floating	4
Where XXX= 561 for line #1 and XXX= 617 for line #31			

DEC FORM NO. DEC 16-13811-1022-N370
DRA 106
REV H

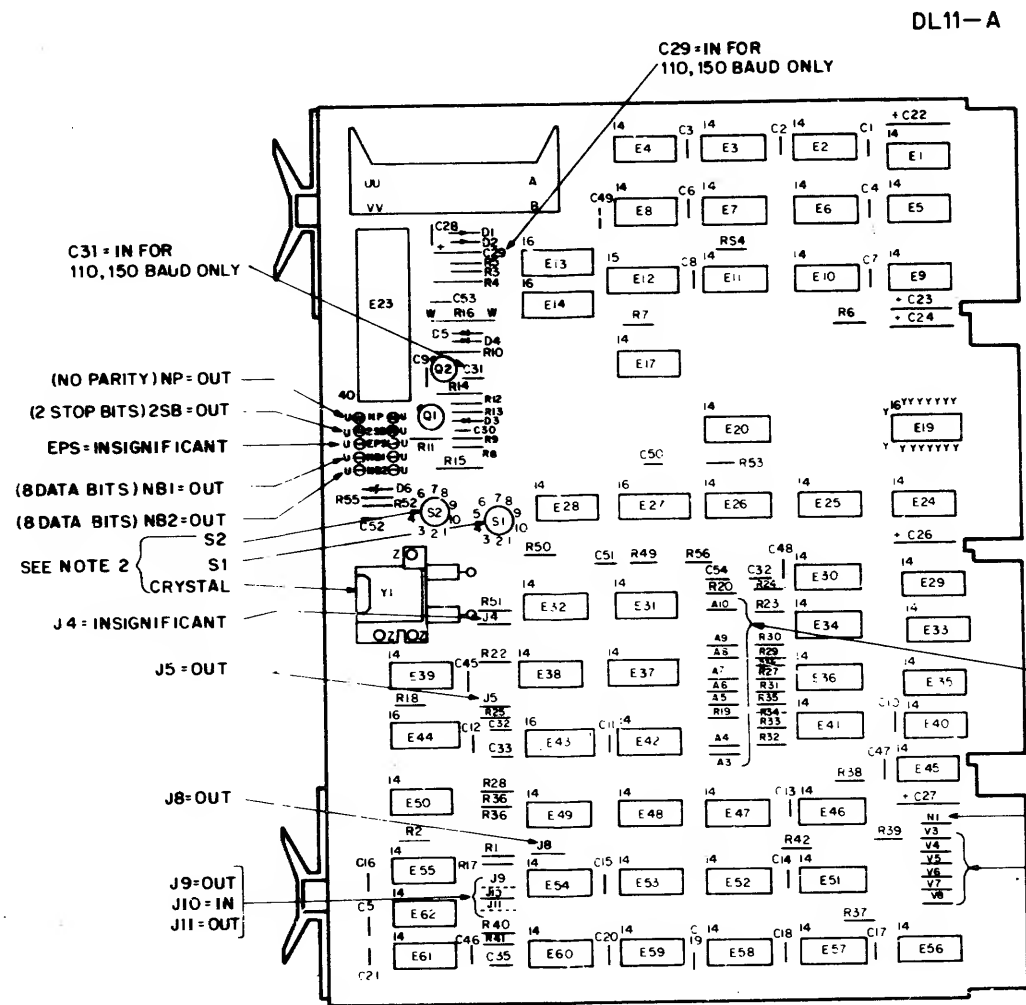
SIZE CODE A SP
NUMBER DL11-0-2
SHEET 4 OF 11

ENGINEERING SPECIFICATION		CONTINUATION SHEET																										
TITLE DL11 INSTALLATION PROCEDURE																												
E. SPECIAL NPR JUMPER: Jumper N1, shown on drawing DL-6, controls the response of the interrupt circuit to an NPR request. The jumper should normally be IN, except for 11/20 and 11/15 systems without the KHI1 option.																												
F. SELECTION OF DATA FORMAT:																												
1. Data Bits Split lug pairs NB2 and NB1 control the number of data bits in the serial character as follows:																												
<table><tr><td>NB2</td><td>NB1</td><td># OF DATA BITS</td></tr><tr><td>OUT</td><td>OUT</td><td>8</td></tr><tr><td>OUT</td><td>IN</td><td>7</td></tr><tr><td>IN</td><td>OUT</td><td>6</td></tr><tr><td>IN</td><td>IN</td><td>5</td></tr></table>				NB2	NB1	# OF DATA BITS	OUT	OUT	8	OUT	IN	7	IN	OUT	6	IN	IN	5										
NB2	NB1	# OF DATA BITS																										
OUT	OUT	8																										
OUT	IN	7																										
IN	OUT	6																										
IN	IN	5																										
2. Parity Parity is controlled by split lug pairs NP and EPS as follows:																												
<table><tr><td>NP</td><td>EPS</td><td>PARITY</td></tr><tr><td>OUT</td><td>OUT</td><td>OFF</td></tr><tr><td>OUT</td><td>IN</td><td>OFF</td></tr><tr><td>IN</td><td>OUT</td><td>EVEN</td></tr><tr><td>IN</td><td>IN</td><td>ODD</td></tr></table>				NP	EPS	PARITY	OUT	OUT	OFF	OUT	IN	OFF	IN	OUT	EVEN	IN	IN	ODD										
NP	EPS	PARITY																										
OUT	OUT	OFF																										
OUT	IN	OFF																										
IN	OUT	EVEN																										
IN	IN	ODD																										
3. Stop Bits Split lug pair 2SB and jumpers J9, J10 and J11 control the number of stop bits in the serial character as follows:																												
<table><tr><td>2SB</td><td>J9</td><td>J10</td><td>J11</td><td># OF STOP BITS</td></tr><tr><td>OUT</td><td>OUT</td><td>IN</td><td>OUT</td><td>2</td></tr><tr><td>IN</td><td>OUT</td><td>IN</td><td>OUT</td><td>1</td></tr><tr><td>IN</td><td>OUT</td><td>OUT</td><td>IN</td><td>1.5 for TI, GL, and SMC UARTS</td></tr><tr><td>IN</td><td>IN</td><td>OUT</td><td>OUT</td><td>1.5 for WD UARTS</td></tr></table>				2SB	J9	J10	J11	# OF STOP BITS	OUT	OUT	IN	OUT	2	IN	OUT	IN	OUT	1	IN	OUT	OUT	IN	1.5 for TI, GL, and SMC UARTS	IN	IN	OUT	OUT	1.5 for WD UARTS
2SB	J9	J10	J11	# OF STOP BITS																								
OUT	OUT	IN	OUT	2																								
IN	OUT	IN	OUT	1																								
IN	OUT	OUT	IN	1.5 for TI, GL, and SMC UARTS																								
IN	IN	OUT	OUT	1.5 for WD UARTS																								
G. CRYSTAL SELECTION: The clocking scheme of the DL11 consists of a single crystal oscillator feeding a divider network, with two 10-position switches tapping various points to feed into the UART's																												
SIZE CODE		NUMBER	REV																									
A SP		DL11-0-2	H																									
DEC FORM NO DEC 16-(381)-1022-N370 DRA 108																												
M/K SHEET 5 OF 11																												

ENGINEERING SPECIFICATION		CONTINUATION SHEET																																																																	
TITLE DL11 INSTALLATION PROCEDURE																																																																			
6. Con't transmitter and receiver sections. Thus, for a given crystal frequency, 8 baud rates are independently selectable for transmit and receive. The two addition switch positions select external clocks.																																																																			
<table><tr><td>SPEED GROUP</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td colspan="5">CRYSTAL (KZ)</td></tr><tr><td>POSITION</td><td>FACTOR</td><td>844.8K</td><td>1.03296M</td><td>1.152H</td><td>4.608M</td></tr><tr><td>1*</td><td>23040</td><td>36.7</td><td>44.8</td><td>50</td><td>200</td></tr><tr><td>2</td><td>15360</td><td>55</td><td>87.3</td><td>75</td><td>300</td></tr><tr><td>3</td><td>7680</td><td>110</td><td>134.5</td><td>150</td><td>600</td></tr><tr><td>4</td><td>3840</td><td>220</td><td>269</td><td>300</td><td>1200</td></tr><tr><td>5</td><td>1920</td><td>440</td><td>538</td><td>600</td><td>2400</td></tr><tr><td>6</td><td>960</td><td>880</td><td>1076</td><td>1200</td><td>4800</td></tr><tr><td>7</td><td>640</td><td>1320</td><td>1614</td><td>1800</td><td>7200</td></tr><tr><td>8</td><td>480</td><td>1760</td><td>2152</td><td>2400</td><td>9600</td></tr></table>				SPEED GROUP	1	2	3	4	CRYSTAL (KZ)					POSITION	FACTOR	844.8K	1.03296M	1.152H	4.608M	1*	23040	36.7	44.8	50	200	2	15360	55	87.3	75	300	3	7680	110	134.5	150	600	4	3840	220	269	300	1200	5	1920	440	538	600	2400	6	960	880	1076	1200	4800	7	640	1320	1614	1800	7200	8	480	1760	2152	2400	9600
SPEED GROUP	1	2	3	4																																																															
CRYSTAL (KZ)																																																																			
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4	3840	220	269	300	1200																																																														
5	1920	440	538	600	2400																																																														
6	960	880	1076	1200	4800																																																														
7	640	1320	1614	1800	7200																																																														
8	480	1760	2152	2400	9600																																																														
Most counter-clock wise position. To determine a crystal frequency for a non-standard baud rate, pick the position of the closest baud rate in the 1.152MHz column, and then multiply the non-standard baud rate by the factor for that position. For example, if the customer specifies 1050 baud, this is closest to 1200 baud, position 6. 1050 X 960 = 10080000 = 1.008MHz. The crystal frequency should not fall outside the range of the standard crystals. Although the above table included only the standard DL11 crystals other values may be specified by the customer or by other documentation of an option which uses the DL11. DEC part number for the standard crystals are as follows: 844.8 KHZ 18-10245-1 1.03296 MHZ 18-05501-6 1.152 MHZ 18-05501-5 4.608 MHZ 18-05501-7 *Use A or C cut crystals only. Do not use crystals marked NE-6D. When ordering a special crystal, refer to purchase specification 18-05501 for crystal specification. Insure that transparent vinyl tape (9008269) is applied to the top surfaces of the crystal and mounting brackets to insulate from adjacent modules.																																																																			
SIZE CODE		NUMBER	REV																																																																
A SP		DL11-0-2	H																																																																
DEC FORM NO DEC 16-(381)-1022-N370 DRA 108																																																																			
M/K SHEET 6 OF 11																																																																			

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
TITLE DL11 INSTALLATION PROCEDURE			
H. G8000 INSTALLATION: For DL11-B, D, and E a positive voltage is required between 9 and 15 volts to operate the EIA drivers. For POP-11/20 and POP-11/15 systems with the M720 power supply, a G8000 module must be installed to provide this voltage. Using a filter network, this module converts the full-wave rectified "+8V" signal to a positive DC voltage. 1. Install G8000 into slot A02 of DB11-A. 2. Wire A03V2 to A02V2. 3. Wire A02N2 to C1X01 where XX is the slot location of the M7800. Refer to diagram 1.			
SIZE CODE		NUMBER	REV
A SP		DL11-0-2	H
DEC FORM NO DEC 16-(381)-1022-N370 DRA 108			
M/K SHEET 7 OF 11			

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
TITLE DL11 INSTALLATION PROCEDURE			
DIAGRAM 1. G8000 INSTALLATION 			
SIZE CODE		NUMBER	REV
A SP		DL11-0-2	H
DEC FORM NO DEC 16-(381)-1022-N370 DRA 108			
M/K SHEET 8 OF 11			



NOTES:

- For further information on the DL11-A configuration or the installation of DL11-B, DL11-C, DL11-D or DL11-E refer to:
 - DL11 Asynchronous Line Interface Manual
 - A-SP-DL11-0-2 (DL11 installation procedure) in the DL11 Engineering Drawings.

SPEED GROUP	1	2	3	4
CRYSTAL FREQ (HZ)	844.8K	1.03296M	1.152M	4.608M
SI, S2 POS.	BAUD RATE			
1	36.7	44.8	50	200
2	55	67.3	75	300
3	110	134.5	150	600
4	220	269	300	1200
5	440	538	600	2400
6	880	1076	1200	4800
7	1320	1614	1800	7200
8	1760	2152	2400	9600

Position 1 is most counter-clockwise position.

ADDRESS

NI (IN EXCEPT FOR 11/20 & 11/15 SYSTEMS WITHOUT KH11 OPTION)

VECTOR ADDRESS

11-2454

ENGINEERING SPECIFICATION

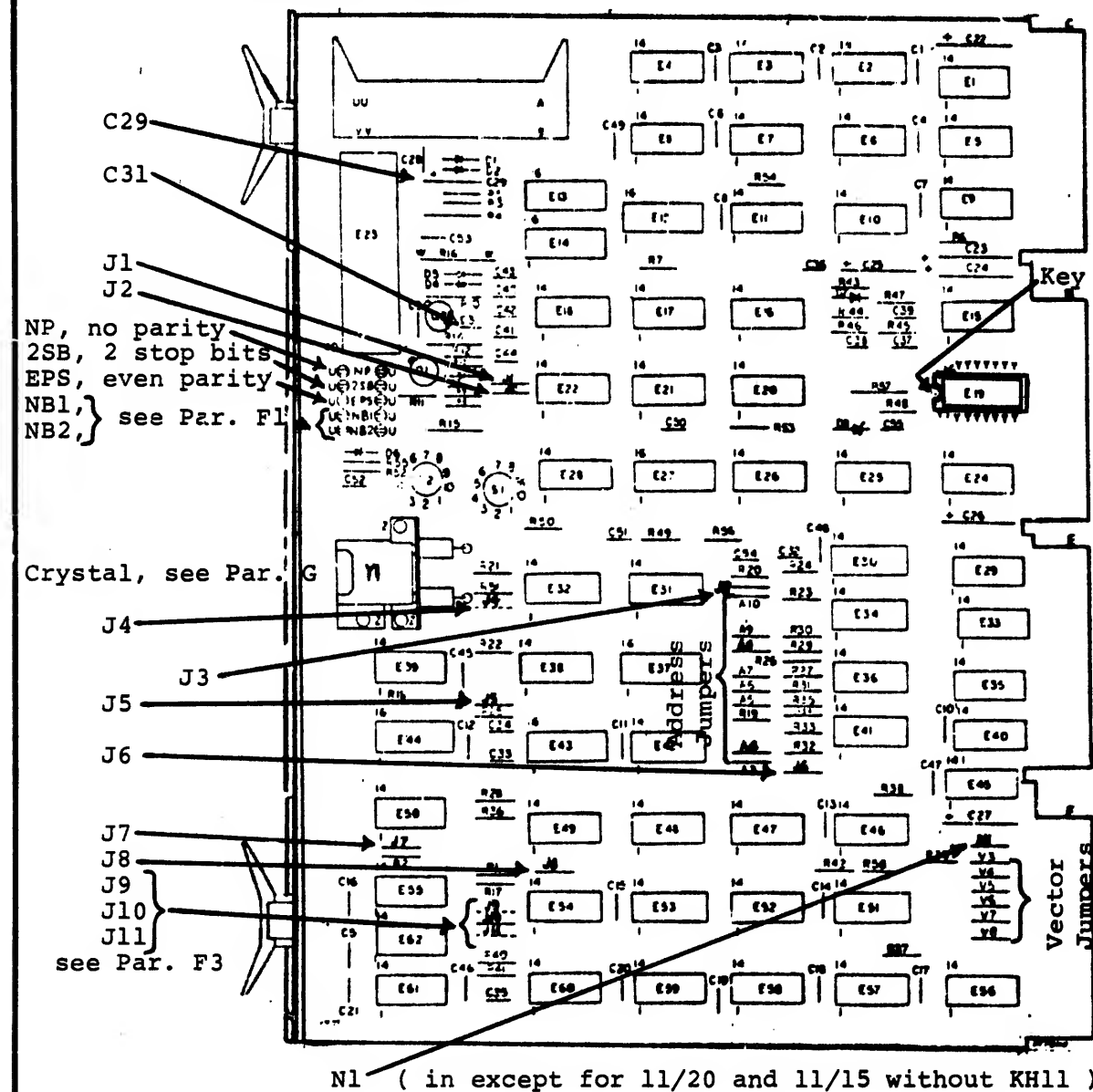
CONTINUATION SHEET

TITLE DL11 INSTALLATION PROCEDURE

DL11-B/D/E
(M7800)

NOTE: For jumper configuration of DL11-B/D/E refer to page 3&5.

C29 and C31 are required for DL11-A and C at 150 BAUD or less, DL11-B,D&E don't care.



SIZE	CODE	NUMBER	REV
A	SP	DL11-0-2	H

ENGINEERING SPECIFICATION

CONTINUATION SHEET

TITLE DL11 INSTALLATION PROCEDURE

Figure 1
Identifying Marks for UART (19 10459) Vendors

STANDARD
MICROSYSTEMS



GENERAL
INSTRUMENT



TEXAS
INSTRUMENTS



ADVANCED
MICRO DEVICES



WESTERN DIGITAL



SIZE	CODE	NUMBER	REV
A	SP	DL11-0-2	H